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IN REPLY
REFER TO DSCC-VAT 1 July 2004

MEMORANDUM FOR MILITARY/INDUSTRY DISTRIBUTION

SUBJECT: Initial Draft of MIL-PRF-8805 /11J, /14F, /15G, /17G, /18G, /19F, /23G, /25F, /34E, /38G, /40H, /47G, /48H, /49H, /65D, /76H, /84E, /90F, /96E, /100F, /101K, /104C, /107C, /110D, and /114C. Project numbers 5930-1838 through -1863.

The drafts of the above subject documents are being sent to you for review and comments. These drafts consist o the following changes:

Updating of referenced documents.
Incorporation of amendments.

If these documents are of interest to you, please provide your comments electronically. This can be in the form of a return e-mail, with or without an attached text file. A 45-day coordination cycle from the date of this letter has been allotted. Please provide your comments within that time period. If no comments are received in the allotted 45 day coordination cycle, concurrence is assumed and all comments received after will be held to the first amendment. If an electronic response is not possible we will still accept comments via letter, facsimile or phone call but only after you have contacted the project officer listed below. The draft documents can be found at the following DSCC-VA web page:

www.dscc.dla.mil/Programs/MilSpec/initialdrafts.asp

This process still requires military departments to identify their comments as “Essential” or “Suggested”. Essential comments must be justified with supporting data. Military review activities should forward comments to their custodians or this office, as applicable, in sufficient time to allow for consolidating the department reply.

If there are any questions, please contact Mark Rush by the preferred method of E-Mail at Mark.Rush@dla.mil or by telephone at commercial 614-692-0550, DSN 850-0550; or by facsimile at 614-693-1644. Our mailing address as a last resort is Defense Supply Center, Columbus, DSCC-VAT, P.O. Box 3990, Columbus, OH 43216-5000. If you have further questions or concerns you may contact me at Kendall.Cottongim@dla.mil, by telephone at 614-692-0676 or by facsimile at 614-692-6939.

/ SIGNED /
KENDALL A. COTTONGIM
Chief
Electronics Components Team

NOTE: This draft, dated July 1, 2004 prepared by DLA-CC,
has not been approved and is subject to modification.
DO NOT USE PRIOR TO APPROVAL.
(Project 5930-1860)

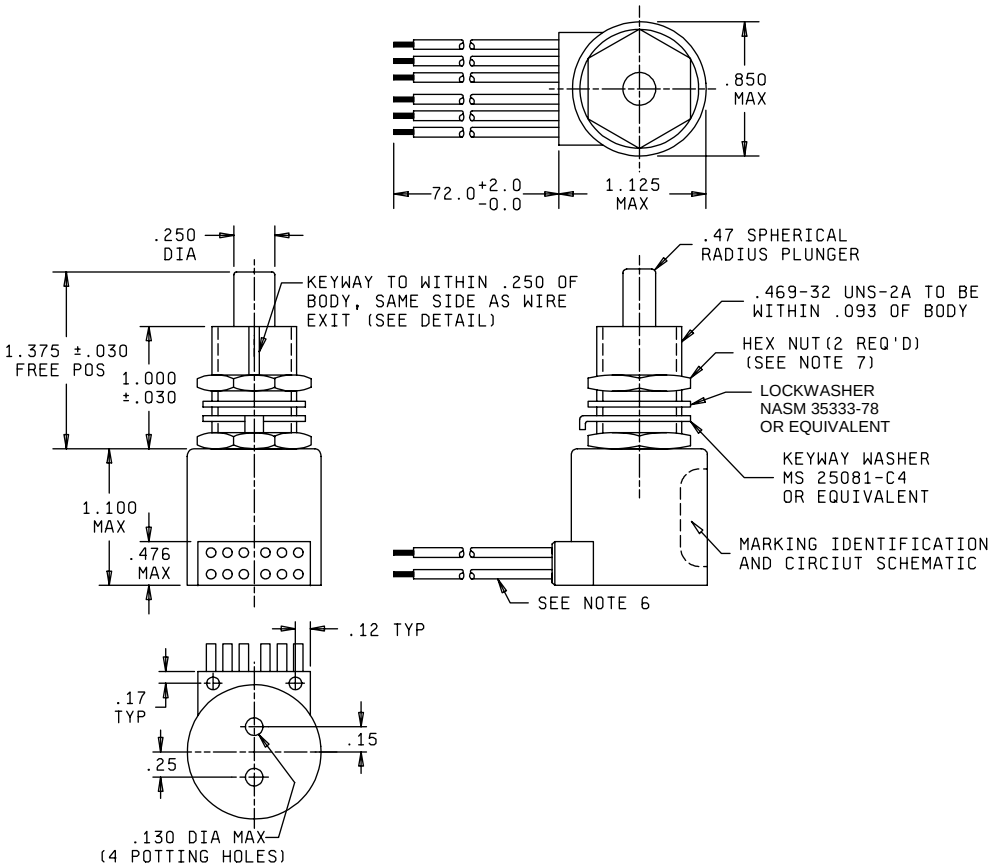
INCH-POUND
MIL-PRF-8805/104C
DRAFT
SUPERSEDING
MIL-PRF-8805/104B
3 September 1999

PERFORMANCE SPECIFICATION SHEET

SWITCHS, SENSITIVE, PLUNGER, 7 AMPERES,
4PDT, RESILIENT SEAL, GROUNDED PLUNGER

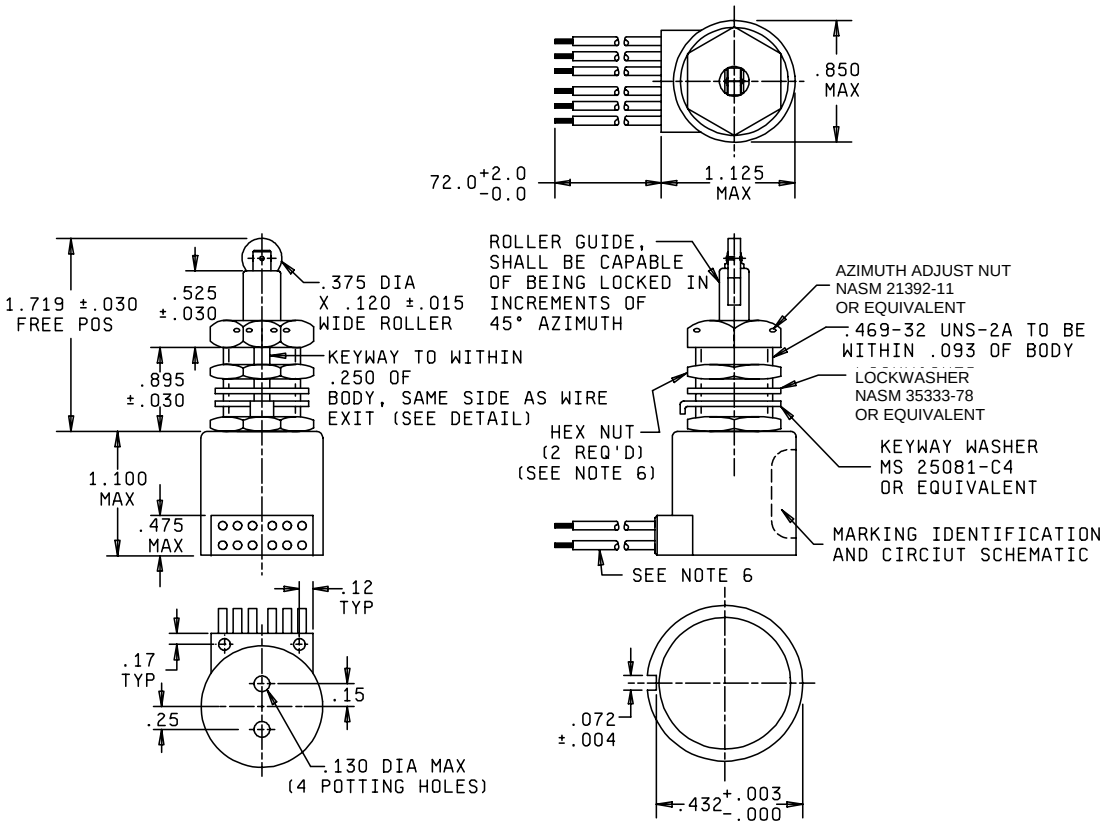
This specification is approved for use by all Departments and Agencies of the Department of Defense.

The requirements for acquiring the product described herein shall consist of this specification and MIL-PRF-8805



M8805/104-001
PIN PLUNGER

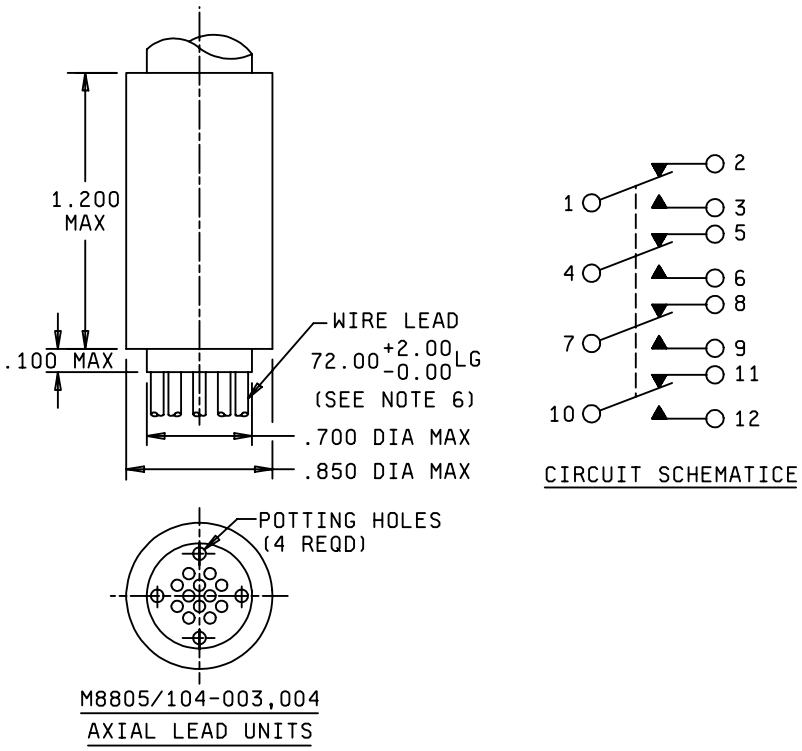
FIGURE 1. Dimensions and configurations.



M8805/104-002
ROLLER PLUNGER

KEYWAY DETAILS

FIGURE 1 Dimensions and configurations - Continued.



Inches	mm	Inches	mm	Inches	mm	Inches	mm
.003	0.08	.12	3.05	.469	11.91	1.000	25.40
.004	0.10	.130	3.30	.47	11.94	1.100	27.94
.015	0.38	.15	3.81	.475	12.07	1.125	28.58
.030	0.76	.17	4.32	.525	13.34	1.200	30.48
.072	1.83	.250	6.35	.700	17.78	1.375	34.93
.093	2.36	.375	9.53	.850	21.59	1.719	43.66
.100	2.54	.432	10.97	.895	22.73	2.0	50.80
						72.0	1828.80

NOTES:
1. Dimensions are in inches.
2. Unless otherwise specified, tolerances are ±.03 (0.76 mm) for two place decimals, ±.010 (,25 mm) for three place decimals, and 1/2° for angles.
3. Metric equivalents are given for general information only.
4. Contour optional provided maximum dimensions specified are not exceeded.
5. The marking (identification and circuit schematic) shall be permanently and legibly marked on the switch case in the location shown (on side of case opposite keyway).
6. Wire leads shall be marked at 3.0 inch intervals with switch circuit identification number followed by wire gage number (1-20, 2-20, 3-20, etc.).
7. Hex nut shall be MS21340-04 or equivalent. Alternative base metals and protective finishes, as approved by the qualifying activity, may be utilized for hardware material.

FIGURE 1 Dimensions and configurations - Continued.

REQUIREMENTS:

Dimensions and configuration: See figure 1.

Enclosure design: 4 (Resilient).

Temperature characteristic: 1 (-55° to +85°C) continuous duty plus switches shall be subjected to 100 cycles of temperature variations. One cycle is defined as the temperature and times, in order shown, in table I. Immediately upon completion of testing of a temperature requirement, the switches shall be inserted into the subsequent test chamber. At the end of the temperature condition of each cycle, the switches shall make, carry, and break rated resistive current at rated voltage (seal level) for the number of operations shown in table I. Test shall begin after oven temperature stabilizes. Prior to each make/carry/break operation involving rated resistive current the switch shall carry without making or breaking 400 percent of rated resistive current for 200 milliseconds. Failures, defined as the inability to make or break rated resistive current, shall not occur throughout these tests.

TABLE I. Temperature cycling.

Temperature	Time	Number of switch operations
(°C)	(Minutes)	
110	30	30
174	10	10
215	1	2

Shock type: Method 213, test condition B (75G), MIL-STD-202.

Vibration grade: 2 (10 Hz to 2,000 Hz).

Weight: M8805/104-001,-003: .75 pound max.
M8805/104-002,-004: .80 pound max.

Operating characteristics (±20 percent variation from specified values acceptable after test):

Actuating force:	9 ±3 pounds.
Full overtravel force:	30 pounds maximum.
Releasing force:	5 pounds minimum.
Pretravel:	.050 inch maximum.
Movement differential:	.030 inch maximum
Overtravel:	.125 inch minimum.
Coincidence of operating and releasing points:	All circuits shall transfer within .010 inch of plunger travel after first circuit transfers.
Strength of actuating means:	100 pounds minimum.

Contact resistance: Low level circuit requirements apply.

Dielectric withstanding voltage:

Sea level: 1,250 V rms.

Altitude: 600 V rms at 80,000 feet.
After electrical endurance, the dielectric withstanding voltage points of application between all unconnected terminals of the same pole is not applicable.

Seal test: Only watertight test shall be performed in group A.

Mechanical endurance: 25,000 cycles.

Electrical endurance: 25,000 cycles.

Low level circuit: 25,000 cycles over the continuous duty temperature range (applies provided switch has not made nor broken more than 250 milliamperes at 6 volts dc or peak ac).

Electrical ratings: See table II.

Moisture resistance: When switches are tested wet, the insulation resistance shall not be less than 100 meg-ohms.

Icing: Applicable.

Case and plunger grounding for EMI: All case parts shall be bonded together (such as by staking, soldering, welding, or brazing) either along the entire abutting surfaces or at a minimum of four approximately equally spaced areas along each abutting surface. The electrical resistance between the plunger and the wire exit portion of the switch housing bracket most remote from the threaded bushing shall not exceed 800 milliohms under all the following conditions:

a. Measurements made in accordance with MIL-STD-202, method 311.
b. Without polishing or cleaning the areas on the switch to which the test leads are attached.
c. With the plunger both fully extended and fully depressed.
d. Throughout the total life of the switch.

Wire exit: Wire lead-potting junction shall be protected from damage resulting from lead-dress strains. Compliance with this requirement shall be proved as follows:

Three leads shall be tested.
No lead shall be tested in more than one direction.
Forces shall be applied in three mutually perpendicular directions, including the one most likely to cause failure.
Qualification testing (destructive): A force of 20 pounds shall be applied for a period of 24 hours minimum after which there shall be no break through the insulation at the strain relief. The force shall be increased in three-pound increments for a duration of five minutes minimum for each increment. The wire insulation shall be examined for break through at the strain relief after each five-minute exposure at the increased load. The test shall be conducted with loads increased up to 42 pounds or until wire breakage. Permanent deformation of strain relief components shall not occur at loads less than 24 pounds. Wire elongation shall not be considered as cause for failure. Wire breakage shall not occur at loads less than 20 pounds. There shall be no detrimental effect on the potting which results in seal failure, or failure to meet the dielectric withstanding voltage requirements.
Group C (non-destructive): A 15 pound load shall be applied for one minute. There shall be no permanent deformation of the strain relief members of break through of the wire insulation, or wire breakage. There shall be no detrimental effect on the potting which would result in failure to meet the seal and dielectric withstanding voltage requirements.

Marking: Marking shall remain legible after the following test:

a. Soak for a minimum of 72 hours at room temperature in each of the fluids specified below.
b. After each soak period the specimen shall be wiped dry and then rubbed with a dry thumb a minimum of 20 times applying moderate pressure. Note: Each test specimen shall be subjected to soak periods in all the fluids.
c. If metal foil identification plates are used, they shall comply with MIL-P-19834. In addition to the legibility requirement defined herein, the identification plate shall not become loosened or partially or completely detached from the switch housing during or after the soak tests.
d. The test fluids to be used shall include:
   MIL-J-5161, Jet Fuel, Referee.
   MIL-PRF-5606, Hydraulic Fluid, Petroleum Base, Aircraft, Missile, and Ordnance.
   MIL-PRF-7808, Lubricating Oil, Aircraft Turbine engine, Synthetic Base.

Part numbers: M8805/104 - (dash number from table IV).

TABLE I. Electrical ratings.

Load	28 V dc		115 Vac, 400 Hz	
	Sea level	80,000 ft.	Sea level	80,000 ft.
	(amperes)	(amperes)	(amperes)	(amperes)
Resistive	7	7	1	1
Inductive	3	3	1	1
Motor	4	4	1	1
Lamp	2	2	1	1

Qualification and group C retention of qualification:

Group submission: See table III.

Group C retention of qualification: Nondestructive wire exit test is applicable (6 sample units).

TABLE III. Qualification and group - C tests (group submission).

Examination or test	Samples	Extent of approval
Qualification inspection table of MIL-PRF-8805 1/	M8805/104-002 (12 units)	All
Visual and mechanical examination Operating characteristics	, -004 (2 units each)	
Wire exit test 2/	M8805/104-001, -004 (2 units each with potting, 2 units each without potting)	
Temperature cycling 3/ (in accordance with table I)	M8805/104-001 (2 units)	
Marking test 4/	M8805/104-001 (2 units)	

1/ Case and plunger grounding test to be accomplished before and after mechanical endurance.
2/ Destructive test is applicable in initial qualification testing only.
3/ Applicable in qualification testing only.
4/ Following immersion, the switch shall also be subjected to terminal strength, insulation resistance, dielectric withstanding voltage, operating characteristics, and seal tests.

TABLE IV. Dash numbers.

Dash number	Actuator	Wire exit
-001	Pin plunger	Side
-002	Roller plunger	
-003	Pin plunger	Bottom
-004	Roller plunger	

Referenced Documents"
MIL-J-5161
MIL-PRF-5606
MIL-PRF-7808
MIL-PRF-8805
MIL-P-19834
MS21340
MS25081
MIL-STD-202
NASM 35333
NASM 21392

Custodians:
Air Force - 11
DLA - CC

Preparing activity:
DLA - CC

(Project 5930-1860)

NOTE: The activities listed above were interested in this document as of the date of this document. Since organizations and responsibilities can change, you should verify the currency of the information above using the ASSIST Online database at www.dodssp.daps.mil.